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WOB

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/319,566 08/09/99 HANSEN

IM22/0905

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EXAMINER	
H	27656/35739
ART UNIT	PAPER NUMBER

ANGEBRANDT, M
DATE MAILED:

1756

09/05/01

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

WOB

Office Action Summary

Application No.

09/319,566

Applicant(s)

HANSEN, HANS-JURGEN

Examiner

Martin J Angebrannt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 25 June 2001.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. The response provided by the applicant has been read and given careful consideration.

Responses to the arguments offered by the applicant are presented after the first rejection to which they are directed. The applicant should correct misspellings within the specification, such as "diskussion" on page 11 at line 23.

- 2 The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

- 3 Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The structures added in the amendment after on pages 22 and 23 after "and" in the most recent amendment were not found in the specification as filed. These constitute new matter and those for which an **explicit basis** cannot be found within the specification must be deleted in the next response.

Also in claim 16, The compound at the top of the page on page 22 of the amendment is new matter as it has an extra methyl group in the 5 position beyond the original description.

Also with respect to the second compound on page 22 of the amendment is new matter as there is an extra methylene group between the two phenyl groups relative to the disclosure as filed.

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4 Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the language "to produce and/or process a material having at least two distinguishable physical states" is confusing. The language is superfluous and adds nothing but confusion to the language already describing the transition between the two different conjugation states. The applicant may be attempting to indicate that the states can be physically differentiated, but the language added does not describe this. The language in claim 25 is also objectionable for the same reasons.

5 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7 Claims 1,2,6,7,11-14 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Anger et al. J. Phys. Chem., Vol. 99, pp. 650-652. (1995)

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The 1,5-bisstyryl-3,7-dimethylcyclooctatetraene and the exposure thereof meet the requirements of the claims as the claims do not require any more than the isomerizations.

The applicant argues that the disclosure does not evidence two distinguishable states for the double bond shift. The examiner notes that the exposure occurs and eventually results in other isomerizations as pointed out by the applicant, but the claim language does not indicate that either of these states be stable for long term storage. The examiner also notes that the processing process includes both thermal and photoexcitation. Therefore even transitions occurring rapidly at room temperature are embraced by the current claim language. The rejection stands.

8 Claims 1-7,12,13 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996).

See formulae 3 and 4.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

As discussed above, the claims embrace both photo and thermal excitation of the transition between the two states. Further, the examiner notes that the absorption of the two different states differ and that the starting product is disclosed and forms the basis for the **anticipation rejection**. The rejection is that based upon the evidence, the compounds and processes are not novel as someone has made and used these. The applicant has specifically excluded this compound in the language of claim 16 and as corresponding to the uppermost structure on page 20 of the amendment. The rejection stands.

9 Claims 1-7,12,13 and 16-25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996).

Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996) teaches that double bond shifts in heptalenes and cyclooctatetraenes are reversible, may be either

thermally or photochemically induced and allow these molecules to act as molecular switches. (2282) Various configurations for the reversible compounds are shown on page 2285, including cases where the conjugated substituents are located alpha (1,2) or gamma (1,4) to each other. Differences in the spectra are shown on pages 2301-2304 and 2306. The structures on page 2286 show the formation of various compounds which have either H, Methyl, phenyl, styryl, 4-methoxyphenyl, 4-chlorostyryl, or 4-methoxystyryl as the "R" group. The exchange between methyl and phenyl groups is disclosed. (2283 figure text). Compounds 7a, 10a, and 17b on page 2286 are not excluded by the language of claim 16. Compound 7a,b is also shown on page 2290. Compound 10a,b is also shown on page 2294. Compound 17b is also shown on page 2304.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

The applicant miscites the reference. Please note who the first listed author is. The applicant argues that the publishing date is after the filing date of the instant application. **The applicant is directed to show proof of this, including that the subscribers did not receive it before December 10, 1996. If this showing is made, then rejections based at least in part upon this reference will be removed.**

10 Claims 1-7, 12, 13 and 16-25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Hafner et al., Bull. Chem. Soc. Jpn., Vol. 61, pp. 155-163 (1988).

Hafner et al., Bull. Chem. Soc. Jpn., Vol. 61, pp. 155-163 (1988) teaches the reaction of azulenes with dimethyl acetylenedicarboxylate to form chiral heptalenes. Compounds g, h, m, n, o, u and v on page 156 are not excluded by the language of claim 16. Compound 36a and 38a on page 161 are not excluded by the claim language of claim 16. The CD spectra show differences in the chiral nature of the compositions.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

The applicant does not have a proper basis in the specification as originally filed for the exclusion of the compounds specifically recited in this reference as the specific compounds were not identified in the specification as filed. Therefore this rejection remains including covering claims 16 and those dependent thereon. The examiner also notes that the arguments that these are excluded in claim 16 neglects the fact that they are not excluded in claim 1, which embraces them. The rejection stands.

11 Claims 1-7,12,13 and 16-25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Weber et al., Helvetica Chimica Acta, Vol. 70, pp. 1439-1460 (1987).

Weber et al., Helvetica Chimica Acta, Vol. 70, pp. 1439-1460 (1987) teaches compounds 9 and 11 on page 1441 which are not excluded by the claim language of claim 16 (the esters are ethyl or styryl esters. The syntheses using dimethylene acetylenedicarboxylate is taught on page 1454.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

Please note the first listed author. The applicant does not have a proper basis in the specification as originally filed for the exclusion of the compounds specifically recited in this reference as the specific compounds were not identified in the specification as filed. Therefore this rejection remains including covering claims 16 and those dependent thereon. The examiner also notes that the arguments that these are excluded in claim 16 neglects the fact that they are not excluded in claim 1, which embraces them. The rejection stands.

12 Claims 1,2,6,7,11-14 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Paquette, L.A., Pure Applied. Chem., Vol 54(5) pp. 978-1004 (1982).

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Paquette, L.A., Pure Applied. Chem., Vol 54(5) pp. 978-1004 (1982) teaches t-butyl substituted cyclooctatetraene. (structures 44&45) Similar teachings with respect to 1,2 diphenyl substitution is taught with respect to structures 47 and 38 on pages 995,997, 998 and 1001.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

The applicant fails to appreciate that the claims are broad enough to embrace racemization as the claims do not require that the states be particularly stable. The claims also specifically describe thermal excitation in addition to the photoexcitation. Clearly at lower temperatures, the racemization would stop and each of the two states would be stable and optically distinguishable. The open language of the claims fails to preclude further structural changes beyond the transition between the different conjugation states.

13 Claims 1,2,6,7,11-14 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Hafner et al., Pure Applied Chem., Vol. 65(1) pp. 17-25 (1993).

Hafner et al., Pure Applied Chem., Vol. 65(1) pp. 17-25 (1993) teaches the synthesis using bis-enamine and dimethylene acetylenedicarboxylate to form useful heptalenes on page 22. Note compound 27.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

The applicant argues that compounds disclosed are not conjugated heptalenes. The examiner disagrees noting compound 27 which is fully aromatic. The examiner agrees that the main thrust is other compounds, but this represents an anticipation rejection, not obviousness. The rejection stands.

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14 Claims 1-9, 11-14 and 16-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996), in view of Van et al. '561.

Van et al. '561 teaches that it is old and well known that various photochromic materials can be dispersed in binder resins and used to record information. (1/65-2/9) Useful binders include PMMA, polystyrene and the like. (4/51-55). These recording media are used in computers.

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996) in conventional photochromic recording media where the photochromic dyes are mixed with a binder as this is old and well known based upon the teachings of Van et al. '561.

As discussed above, this rejection will be withdrawn when the applicant supports that statements that the publication and receipt date of the Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996) is after the filing date of the priority document of the instant application.

15 Claims 1-9, 12 and 16-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996), in view of Hoysoya et al. '873.

Hoysoya et al. '873 teaches that photochromic materials are known to be useful in forming optical switches when dispersed in polymeric binder. Any type of photochromic materials may be used in the switches. These include PMMA, polystyrene, and various acrylate resins (6/10-27).

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by Briquet et al., *Helvetica Chimica Acta* Vol 79,

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pp. 2282-2315 (1996) in optical switches using photochromic recording media where the photochromic dyes are mixed with a binder based upon the teaching of Hoysoya et al.

'873 that any type of photochromic materials may be used in the switches.

As discussed above, this rejection will be withdrawn when the applicant supports that statements that the publication and receipt date of the Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996) is after the filing date of the priority document of the instant application.

16 Claims 1-7,10,12 and 16-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996), in view of Caulfield et al., "The Applications of Holography", pp. 30-33 (1970).

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996) in conventional photochromic holographic media as this is old and well known based upon the teachings of Caulfield et al., "The Applications of Holography", pp. 30-33 (1970).

As discussed above, this rejection will be withdrawn when the applicant supports that statements that the publication and receipt date of the Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996) is after the filing date of the priority document of the instant application.

17 Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Angebranndt whose telephone number is (703) 308-4397.

I am normally available between 7:30 AM and 5:00 PM, Monday through Thursday and 7:30 AM and 4:00 PM on alternate Fridays.

If repeated attempts to reach me are unsuccessful, my supervisor may be reached at (703) 308-2464.

Facsimile correspondence should be directed to (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.



Martin J. Angebranndt
Primary Examiner, Group 1750
September 4, 2001